



ARCA Newsletter

Alexandria Research Center for Adaptation to Climate Change



Editorial

Climate change is considered to be one of the most profound global challenges in the 21st century affecting the essence of economic and socio-cultural systems as well as the ecosystems.

The Nile Delta coastal zone, which exhibits a low-lying back-shore between +3 and -1m from MSL, may adversely be affected by a small rise of sea level. Potential impacts of SLR on the Nile Delta may include increased coastal erosion, overtopping of coastal defences and increased flooding, damage to port and city infrastructure, retreat of barrier dunes, decreased soil moisture, increased soil and lagoon water

salinity, and decreased fisheries production.

Despite such a concern for vulnerability of different sectors in Egypt to climate change, very little efforts to quantify accurately future impacts of climate change and vulnerabilities at different levels have been undertaken. Moreover, such efforts are mostly scattered and exhibit no inter-linkages between research institutions. Furthermore, almost all research projects have been missing a vital component, which is the socioeconomics questions that could assist in

vulnerability assessment and guide coastal adaptation.

ARCA, in this respect, intends to address these gaps by creating a centre of excellence and hub for sound research on adaptation to climate change, attempting to build research capacities that could support efforts of assessing the impacts, vulnerability and potential, hard and soft, adaptation options in Egypt. For this to happen, ARCA work on stimulating multi-disciplinary and participatory decision and/or policy making.

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Special points of interest:

- ARCA Core-team Research Activities.
- ARCA Capacity Building Activities.
- ARCA Small Research Grants.
- ARCA Research Activities.
- Article: Climate Change Impacts on Pests and Pesticides Use

ARCA Core Team Member Activities

• Participation in CCT

ARCA participated in the 15th Cairo Climate Talks (CCT), held on 16 -17th April 2013 and was involved in the associated market place activities, including a panel talk and a subsequent discussion. ARCA's staff also displayed its work and shared their experience with the interested public.

• Further collaboration

ARCA currently is leading a shortlisted consortium involving partners from England, India and Bangladesh applying for the CARIIA call for proposals on river deltas in Africa and Asia. ARCA team is working jointly with other consortium

members in developing a full proposal for the project to be submitted in September.

• Meetings

Prof. Mohamed Abdrabo participated in the 4th meeting of the AR5 IPCC Group II Lead author meeting held in Slovenia.



Workshop "Vulnerability of Egypt to climate change" (CB-04) held on 27-28/03/2013

"During the past fourth six months, ARCA provided eight training workshops for 287 of researchers officials"

Capacity building activities

During the past six months ARCA has organized eight workshops, four workshops for researchers and four training workshops for stakeholders.

The eight training workshops covered a variety of topics ranging from climate change associated topics to basic research skills.

The four workshops targeting stakeholders covered the following topics :

- ◆ Climate change: A comprehensive perspective (three rounds)
- ◆ Vulnerability of Egypt to climate change (one round).

The first workshop, organized three times, targeted agriculture sector officials, aquaculture sector representatives and preparatory schools students in Alexandria, respectively.

Also, a workshop entitled vulnerability of Egypt to climate change, was held in Cairo, targeting EEAA staff.

During the same period, four training workshops targeting researchers covering the following topics:

- ◆ Climate change and agricultural sectors: impacts, vulnerability, and adaptation.
- ◆ Climate change: a comprehensive perspective.
- ◆ How to develop a project proposal.
- ◆ Economic valuation of climate change impacts

It is worth mentioning that, the third workshop, entitled "How to develop a project proposal", was organized in cooperation with IDRC Cairo Regional Office targeting researchers from Cairo University.

The total number of applicants to the organized eight workshops was 382 from different bodies, of which 287 were selected for participation in the held workshops.

About one-third of those selected to participate in the organized workshops were researchers, who were affiliated with five universities and research institutes affiliated with the Ministry of Agriculture and Ministry of Scientific Research as well as Egyptian Environmental Affairs Agency.

The remaining two-thirds of the participants being from various stakeholders groups including for example, EEAA, Ministry of Agriculture, Ministry of Scientific Research, Business community and NGOs.

Networking and partnership

In addition to a MOU that was previously signed with the University of Kafr-El-Sheikh, two other MOUs were signed with:

- The University of Al-Azhar-Cairo on 17th of January 2013
- EEAA on 29th of February 2013.

These signed MOUs, are having positive impacts on promoting ARCA purpose and activities to a wide range of target groups and boost its role as adaptation to climate change research hub.

It is worth mentioning that these signed and activated MOUs is reflected in the relatively large proportions of participants from these bod-

ies in training activities. For example, more than a half (52.6%) of researchers participated in ARCA training activities undertaken during the previous 4th six months were from kafr El Shiek and Al Azhar Universities.

Also, a workshop was held targeting EEAA main and regional officials was held in March 2013



MOU with EEAA , signed on 29/02/2013

Small Research Grants

• **2nd Round**

The second round of ARCA Small Research Grants was finalized, with six concept notes being submitted. As a result of screening and pre-selection process, one concept note was shortlisted. The full proposal was then developed and evaluated and approved for funding, entitled: "Investigating the effects of sea level rise on buildings and infrastructure and the suggested preventive measures"

• **3rd Round**

The third round of ARCA Research Grants was also announced on 1st of March 2013. Among the submitted four concept notes, of which two were shortlisted and requested to submit full proposals, of which two full proposals submitted, one was approved for funding, entitled: "Vulnerability of animal production to high ambient temperature and possible adaptation options under Egyptian conditions."

This brings the total number of small research grants being funded to four.

• **4th Round**

A fourth round of ARCA Research Grants was announced on 17th of May 2013, this time for shorter period of time (10 months) . A total of 11 concept notes were submitted and are being assessed and pre-screened

"Up till now, ARCA Small research Grants program provided four grants for researchers working on the vulnerability and adaptation of various sectors in Egypt to climate change"

Research activities

During the past 4th six months, two research works are being undertaken and due during the coming couple of weeks. The topics being covered include:

- Modeling impacts of sea level rise on coastal dynamics
- Modeling saltwater intrusion into groundwater in the coastal area of the Nile Delta.

Also, a review article and a research paper were accepted for publication in peer-review international Journals, as follows:

- Review article entitled: "Climate change and epidemiology of human parasitosis in Egypt" Journal of Advanced Research"

<http://www.sciencedirect.com/science/article/pii/S209012321300088X>

- Paper entitled: "GIS-based risk assessment for the Nile Delta Coastal zone under different sea level rise scenarios Case study: Kafr EL Sheikh Governorate, Egypt" (DOI: 10.1007/s11852-013-0273-0) Journal of Coastal Conservation: Planning and Management

<http://link.springer.com/article/10.1007%2Fs11852-013-0273-0>

Meanwhile, the following research paper was submitted for publication in peer-review international journal: Economic valuation of Sea level rise impacts on agricultural sector: Damietta governorate, Egypt

This brings the total number of research papers by ARCA accepted in peer reviewed journals to three.

Moreover, ARCA has engaged a researcher to work on current status of research in Egypt on the following topic: Potential impacts of climate change on insects and potential pesticides use in Egypt and various adaptation options.



Review article entitled: "Climate change and epidemiology of human parasitosis in Egypt"

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Article: Climate Change Impacts on Pests and Pesticides use

The use (and abuse) of pesticides has increased to combat insect-pests and diseases. However, the major causes concern of are the undesirable side effects of these chemicals on biodiversity, environment, food quality and human health. Climate change will have important implications for insect conservation and pest status.

Climate and weather can substantially influence the development and distribution of insects. Most of the warming over the last 50 years is likely to have been due to man-made activities. Anthropogenically induced climatic change arising from increasing levels of atmospheric greenhouse gases would, therefore, be likely to have a significant effect on agricultural insect pests. Latest assessment report from the Intergovernmental Panel on Climate Change (IPCC) predicts an increment in mean atmospheric tem-

perature from 1.1 to 6.4°C toward the year 2100 with equally increasing atmospheric carbon dioxide (CO₂).

Such climatic changes could profoundly affect insects both directly i.e. seasonal shifts of insects and indirectly i.e. changing plant productivity and quality, changing predators increasing insect pests' population.

The review article concluded three areas of concern: (i) The relationship between pesticide use and climate for crops that require relatively large amounts of pesticide; (ii) The direct and indirect effects of changes in climate and atmospheric constituents on agricultural pests; and (iii) adaptation potential.

The review article discussed special agricultural aspects of climate change impacts on insects highlighting the impacts of increasing temperature and rising CO₂ levels on pathogens and

disease. .

This is followed by assessing various implications of climate change for pests and diseases with particular emphasis on insects population and fungal diseases.

Moreover, the article discussed the toxicology of climate change.

Also, the article provided some examples of studies undertaken to assess the impacts of climate change on pests and pesticides at national level (USA, Taiwan, Argentina and Egypt) and continental level (Africa and Europe).

Finally, the Article summarized potential strategy for adaptation to the impacts of climate change on pests and pesticides use.